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JANUARY 1978

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In This Issue

Cover: The art and science of mushroom growing are discussed in this issue.

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Journal Jottings

I have been enjoying something for most of my life and have only recently found out it's good for me! If there is a box of fresh mushrooms in the refrigerator or a can on the shelf, then I always feel secure in the knowledge that I have the makings of a meal, be it simple or fancy. If one box in the frig keeps one happy, can you imagine the ecstasy of being surrounded by hundreds of white mushrooms still growing in rich dark soil. To be able to reach over, break one off the stem and taste it. This happy experience occurred recently when a small group of us visited Slack Brothers Limited in Waterloo. An account of this visit, plus some background information on mushrooms by Professor Ralph Estey, whose assistance with the article, "The Art of Mushroom Growing" is much appreciated, as well as a few recipes will, we trust, add a slightly different flavour to our

usual reading fare. You might also be interested in the following reprinted from "Canada Agriculture" Fall 1977.

"The value of Canada's third most important vegetable crop is mushrooming. Canadian mushroom production last year reached more than 42 million pounds with a total value of \$31 million. Projections for 1977 and 1978 call for increased production to 50 and 57 million pounds respectively. Ontario and Quebec account for more than 80 per cent of total production, with Ontario producing roughly 60 per cent of domestic needs.

"Total investment in mushroom growing and processing in Canada reached more than \$41 million in 1976, up about 17 per cent from the 1975 level of \$35 million. While the crop has not advanced from its third position behind potatoes and tomatoes, production of both fresh and processed

mushrooms continues to grow to meet increasing domestic demand."

The Quebec Women's Institutes, as members of the Associated Countrywomen of the World, are part of a group of eight million women from 68 different countries.

As one of 1,500 delegates, Mrs. Jas. Robertson, from Hemmingford, represented the QWI at the ACWW Conference in Kenya. Mrs. Robertson's interesting account of the Conference and of Kenya begins in this issue. We Canadians may appreciate our own lot a little more when we read of some of the needs of others — basic, fundamental needs we readily take for granted.

Hazel M. Clarke

At this time of the year farmers are faced with the dilemma of planning their operation. In the process of planning, the farmer must deal with many uncertainties. It is by no means an easy undertaking to predict prices, markets, technical problems, weather and diseases which invariably become a focal point of a successful operation and directly influence the agricultural industry and the individual livelihood.

The uncertainties experienced in agriculture can be classified as manageable and unmanageable factors. The manageable factors, such as technical production problems, diseases and markets, become more and more defined with thorough and reliable information which makes it possible to make good and sound production decisions. Keeping up to date on new developments in agriculture can be time consuming. Because of the nature and diversity of the agricultural business, an enormous wealth of information is available. The selection of information relevant to an operation requires an

investigation of the sources to make possible sound planning and decisions. Trade or farm magazines, meetings, radio, television, government outlets, universities, agricultural research farms or personal contact form the pool of the information sources.

There is no one particular source that provides all the information required by a particular operation. Each has its own attributes and makes a contribution to information requirements.

Macdonald College, as an institution, has played an important role in providing information to people involved in agricultural industries through its programs in education, research, and extension. This continual exchange between farmer and researcher has contributed to a greater reliability and relevancy of information which has benefited both the farmer and Macdonald College.

Government and agribusiness are also significant sources of information each with its own ultimate objective and message.

The most important facet of any exchange is the reaction to the information. The feedback, comments, and questions generated are of substantial importance; only then will the message become relevant to an operation.

As a farmer, the most effective way to provide feedback is through group process of farm organization. A group can also be more effective in dispelling many of the uncertainties by information interaction. What seems initially as an uncertainty could become a manageable certainty thus improving an overall livelihood.

Martin van Lierop
Editor.

Canadian Grain and Livestock Situation and Outlook

by **A. Douglas Mutch,**
Department of
Agricultural Economics

Overview

Agriculture in Quebec can neither operate in isolation from the rest of Canada nor, to a larger degree, from the rest of the world. This fact has been amply demonstrated in recent years when production difficulties elsewhere in the world have been reflected by increased export demand for Canadian agricultural products. The resultant price strength, especially in the grain sector, has had repercussions throughout the whole agricultural sector. Although higher grain prices definitely aided the grain producers, they also subjected the dairy and livestock industries to sharply increased input costs. As these costs were passed through the production system to the retail level, consumer resistance hurt sales. The general inflationary trend within the country also raised most other farm input costs — through machinery, fertilizers, labour, etc. Thus the agricultural sector has faced severe upward pressures in recent years.

World food production increases in 1976 alleviated the global shortages and allowed some stockpile replenishment. Output increased further in 1977, returning the world to surplus conditions in the sense that more than enough food was available for those individuals and nations able to afford to pay for it. Initial indications for 1978 point to at least adequate supplies and a strong likelihood of further

stockpile buildups. Food markets in general reflect this trend and will continue to do so in the year ahead. Farm level prices of some products will continue to weaken, while others, which have shown recent strength, will come under increasing downward pressures. Those products which are priced through marketing boards and not by market forces — such as dairy products — will continue to reflect production costs but any price increase will meet increased consumer resistance. Off-farm price increases will continue to widen the farm-retail price spread.

One major advantage gained by Canadian agricultural producers over the past year has been the devaluation of the Canadian dollar vis à vis the U.S. dollar and other major world currencies. Since late 1976, the value of the Canadian dollar has dropped from \$U.S.1.03 to \$U.S.0.90. This decline has given domestic producers an increased competitiveness against U.S. farm products and should stimulate increased Canadian farm exports and decreased U.S. farm imports. Any U.S. producer now wishing to penetrate the Canadian market receives only \$U.S.0.90 for every dollar's worth of produce sold in Canada. Prior to the devaluation, exporters to the Canadian market received \$U.S. 1.03 for every dollar of sales in this country. Similarly, whereas Canadian producers received only 97 cents per U.S. dollar of sales prior to the devaluation, Canadian agricultural exports to the United States now return \$1.10 in this country for every dollar of sales in U.S. markets. As many diverse and often unpredictable factors

influence Canadian foreign exchange rates, it is not possible to guarantee that the dollar will remain at \$U.S. 0.90 throughout 1978. However, world foreign exchange markets have stabilized near this rate in recent months and most projections do indicate that the Canadian dollar appears correctly valued at this current rate.

As a result of this change in the exchange rate between the Canadian and U.S. currencies, domestic farm prices in Canada have been relatively stronger over the past year. Price spreads of most products traded between the two countries or entering world markets have not varied significantly when measured in either of the two currencies, but the price in this country when quoted in Canadian dollars has risen roughly 10 per cent more than comparable U.S. market prices quoted in U.S. dollars. Although some of this price advantage was lost through a faster increase in Canadian production costs, the agricultural industry in this country definitely enjoyed a net benefit from the decline of the Canadian dollar in 1977 and will continue to reap these benefits in 1978.

Grains and Oilseeds

Total world wheat, coarse grain, and rice production in 1977 is currently forecast at 1.41 billion metric tons, two per cent below the 1976 record of 1.44 billion, but still the second largest crop ever. Canadian production in 1977 dropped from 1976 levels as can

Canadian Crop Production
(thousands of Bushels)

Crop	1977	1976	1977 vs. 1976
Winter Wheat.....	30,220	24,542	+5,678
Spring Wheat.....	644,900	737,130	-92,230
Duram Wheat.....	46,900	105,000	-58,100
All Wheat.....	722,020	866,672	-144,652
Oats.....	279,000	313,268	-34,268
Barley.....	528,900	482,866	+46,034
All Rye.....	15,400	17,340	-1,940
Flaxseed.....	24,000	10,900	+13,100
Rapeseed.....	78,300	36,900	+41,400
Grain Corn.....	169,400	148,457	+20,943
Soybeans.....	19,000	9,200	+9,800

be seen in the adjoining table. Although some decline in output was originally expected, poor planting conditions due to low soil moisture levels and delayed harvests due to excessive precipitation led to fears that production would drop sharply. The latest estimates by Statistics Canada, however, show that even with the production difficulties experienced this year, total grain supplies will prove more than sufficient for the coming year.

Wheat production dropped 144 million bushels to 722 million in 1977. The decline was due to lower yields and some switching of acreage into alternative crops. World wheat supplies rose sharply during the 1976-77 crop year and wheat prices dropped through late 1976 and into early 1977 both in absolute terms and relative to other grains. Producers therefore decided to switch some acreage into feed grain and oilseed crops hoping these substitutes would yield better returns.

Canadian feed grain production in 1977 rose 46 million bushels to 528 million for barley and increased 20.9 million bushels to 169 million for corn. Harvest

delays between swathing and threshing of the prairie wheat crop resulted in a large increase of feed quality wheat this year, further increasing domestic feed grain supplies for the 1977-78 crop year. Of special importance to eastern feed grain users is the large total corn crop. Most Canadian corn is produced in Ontario and producer supplies of 1976 corn remain large. Total corn supplies for the coming year are extremely high and prices will probably remain depressed relative to both western feed grains and U.S. corn in the coming year.

While wheat prices dropped sharply in 1976 and feed grain prices also declined, oilseed prices were extremely strong. Producers in both Canada and the United States reacted to this situation by increasing plantings in 1977. U.S. soybean output rose 30 per cent and Canadian oilseed production more than doubled. Oilseed prices have tumbled from their pre-planting highs, but the current supply and demand outlook indicates surplus stocks for the coming year and further price declines can be expected.

Livestock and Meat

Global prospects are for large supplies of red meat and poultry well into 1978. Cyclical developments in the livestock industry point to continued growth in pork and broiler supplies and to only modest reductions in total beef output. The composition of the beef supply will include a greater percentage of grain fed beef and a winding down of the liquidation phase of the cattle cycle. These trends also apply to both Canada and the United States and hence, although beef prices should rise in 1977, pork and poultry prices will face downward price pressures which will tend to temper beef price strength.

Relatively low feed grain prices in North America throughout all 1977 stimulated greater meat production. Large crops this fall further increased supplies and the grain surpluses projected to last through 1978 will encourage even more increases in the year ahead.

Livestock production in 1977 increased in reaction to more favourable feed input costs relative to recent years. Output in 1978 will continue to react to this situation and will also reflect the fact that many grain producers are faced with the option of either storing large quantities of feed grains with little prospect of significant price improvement or else feeding the grain to livestock. The extent of feeding increases will determine the degree of price weakness throughout the year ahead.

The cattle industry in both Canada and the United States in 1977 was in the third year of herd liquid-

ation. Cattle numbers peaked in early 1975 when low beef prices then first stimulated the current heavy culling of cows and large calf slaughter. This increased slaughter has kept prices under pressure since that period but most indications now point to some herd stabilization in 1978. Prices have begun to improve and, when cattle production returns become profitable, producers will cease herd liquidations thus reducing market supplies. No major price boom can be expected next year, however, as consumer sensitivity towards prices has increased in recent years and higher beef prices would result in reduced per capita beef consumption and some switching into substitute products.

Both the pork and poultry industries are in the expansion phase of their respective production cycles. Output increased in 1977 and although prices did soften slightly, both industries remained profitable. This fact, coupled with the large feed grain supplies, indicates further production increases through at least the first half of 1978 and possibly the whole year. Lower beef production will reduce the impact of these increased supplies, but prices will still weaken. U.S. producers continue to aggressively expand output and Canada will be a net importer of pork and poultry from the United States in 1978, as was the case in 1977, unless import restrictions are improved.

Summary and Implications

Crop production difficulties outside of North America earlier this decade, increased demand for North American grain. The re-

sultant price increases stimulated higher output from both Canada and the United States. Record 1976 global grain production replenished world stockpiles and near-record output in 1977 has now provided surpluses. Normal production conditions in 1978 will provide at least adequate and probably surplus output in the year ahead. Grain prices have reflected this return to surplus conditions and are currently near four year lows.

These increased grain supplies — most of which have accumulated in Canada and the United States — are in the process of stopping and probably reversing the three-year long reduction of cattle herds. At the same time, through lower feed prices and lack of alternative feed grain demand, pork and poultry output levels rose during 1977 and are expected to continue higher throughout 1978. As a result, beef prices will not be as strong as previously expected, and, pork and poultry prices are poised for price declines in the year ahead.

Although weakness of the Canadian dollar did provide some relative advantage to domestic producers in 1977, increased costs will continue to put pressure on profits in 1978. Canadian agriculture in general appears to be returning to the surplus conditions and depressed prices comparable to the pre-1972 period while still being saddled with post-1975 costs. As agriculture is big business in the sense that individual operations entail an investment of many thousands of dollars, each farm's financial condition will be at least as important as crop conditions in the year ahead.

Although established producers with fully paid farms should be able to weather a period of depressed prices, those producers with a heavily mortgaged operation should pay special attention to cost commitments and avoid over-extending their financial resources. Land prices have risen sharply in recent years in reaction to higher crop prices but these price levels now appear vulnerable in the face of lower product prices. Both urban and rural communities have been willing to bid up land prices during the 1970s in the belief that land and houses are products whose prices continually rise. Urban land prices have recently dropped and so can farm land — especially if it is priced on the hopes of \$4 corn but the realization of only \$2 corn.

Economics has been called the "dismal science" due to the depressing projections continually put forth by economists — who themselves are classified as "purveyors of gloom and doom." However, at this juncture, it does appear that the immediate outlook for the agricultural sector is not very bright. A major production shortfall in other regions of the globe could reverse current price trends next year but this does not appear likely. At present, world agriculture capacity exceeds current demand and as Canadian markets are directly influenced by global conditions, this fact will be reflected in the domestic price levels. Perhaps too much attention has been focused on the fact that world food supplies were critically short earlier this decade and not enough attention given to the fact that we have been able to reverse this situation so quickly.

The Art of Growing Mushrooms

by Hazel M. Clarke

"It's just like walking into fairyland." Unusual words, possibly, to describe an agricultural enterprise but then the enterprise itself is somewhat unusual. Opening a door into the dark, warm world of the cultivated mushroom may indeed be, as Joan Habel said, like being in fairyland, but outside that door is a world of skill, knowledge, hard work, and determination and for the firm of Slack Brothers Limited in Waterloo, Quebec, the expertise that nearly 60 years in mushrooms has developed.

If it isn't all fairyland, then it most certainly is a warm, cordial, and interesting place to visit as Professor Ralph Estey and Dr. Alan Lana of the Department of Plant Science, Edna Smith, Past President of the Quebec Women's Institutes, her brother Earl, Joan Habel, and I soon realized as we were greeted by C. Irving Slack, President of the company, and Stuart McDonald, Sales Manager. We were treated to a fascinating tour of the entire operation and given ample opportunity to ask questions that we thought would be of interest to Journal readers. Irving Slack told us that they welcomed visitors, either those who are considering the possibility of starting a similar enterprise (no easy task, as we soon learned) or those such as senior citizens on an organized day's outing. These latter tours are usually scheduled for a Wednesday in order that normal business operations are not unduly disrupted. This is quite understandable because being the second largest mushroom producer in Canada — seven million pounds per year — is a full-time occupation employing some 300 people which includes or has included several graduates from Macdonald College. Mr. Slack

graduated in 1948. Stuart McDonald, who took both the diploma and degree courses at Macdonald, including a year at Laval University, comes from the Glengarry area of Ontario. He spent his final summer between classes working for Slack's and joined them after graduation in '71.

Our tour, with Stuart McDonald as guide, included visiting the original site of Slack Brothers which is now used to store such basic resources as horse manure, hay, and straw and where the long piles of steaming compost work themselves to readiness. Although research has been carried out with other materials, horse manure (not mixed with shavings) is still the best basic substance for growing high quality mushrooms.

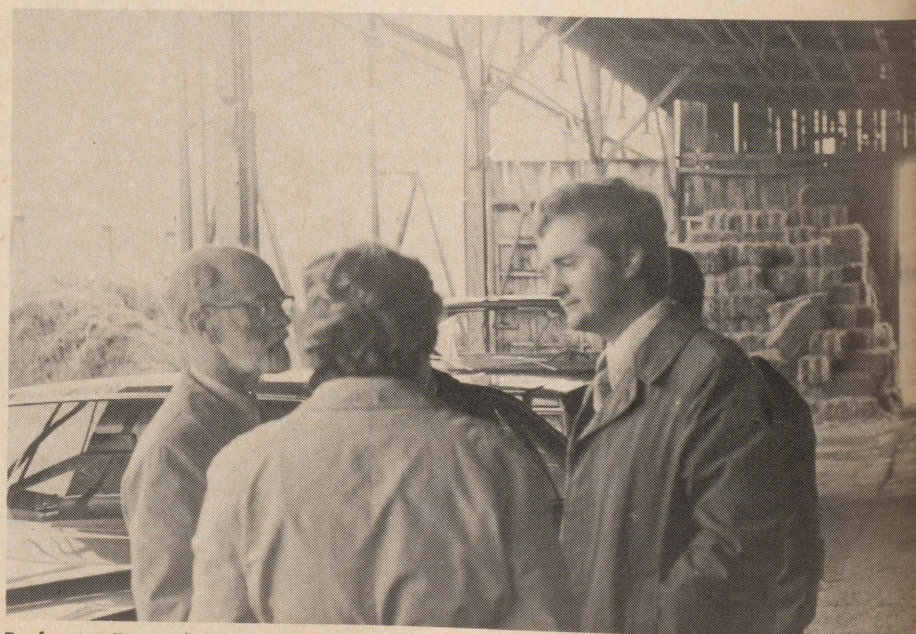
The company has its own fleet of trucks that transport the manure from race tracks and farms within a 200 mile radius of Waterloo; this includes Montreal, Quebec City, and Sherbrooke. The long rows of manure, to which are added straw or hay, brewers' grains, calcium,

etc. depending on the quality of horse manure, are usually composted and otherwise ready for use in the mushroom beds in three weeks' time. Where it once took several men all day to manually turn one compost pile, a special compost machine that straddles the pile now turns the whole thing in about 40 minutes.

"You can't put an exact time on compost," Stuart told us, "It's one of the arts of mushroom growing. It takes a person with years of experience to pick up a handful of the rich material, rub it through his fingers and say, 'this is ready'."

On our way to see the compost piles we passed greenhouses that were in the process of being dismantled. They don't go back that far but it was in the 1880s that Irving Slack's grandfather decided to go into the market gardening business, and it was in 1904 that the original partnership was founded by the two brothers, Charles and Fred.

"In the beginning my father and uncle grew vegetables under



Professor Estey, left, Joan Habel, back to camera, and Stuart McDonald, Sales Manager for Slack Brothers discuss the art of composting.



Steaming rows of compost are turned by a special machine, left background. It takes about three months for the compost to be ready for use in the mushroom beds.

glass. At the end of the second decade, imports from the United States made their relatively high cost operations uneconomical, and," Irving Slack continued, "in 1920 they started experimenting with mushroom growing and erected the first American type shelf or bed houses around 1921. The business grew steadily throughout the '20s and early '30s with my father, Charles W. Slack, becoming the sole owner in 1936.

"At that time he realized he needed expertise and found it at MacDonald College. First he acquired the services of chemistry professor, Dr. Reginald McKibben and a couple of years later Robert Millinchamp, a B.Sc. graduate in agriculture in '31 joined the company."

Mr. Slack told us that in 1941 Dr. McKibben went into business for himself in Georgetown, Ontario, and the company decided to hire someone else with experience in sales. As a result, Robert Flood, another agricultural graduate ('35) joined the company as did, at a later date, Hugh Chambers, a '31 Diploma graduate. Both these men had a long association with Slack Brothers and have only recently retired.

When the Slacks began experimenting with mushrooms in the early '20s, the greenhouse space was changed from the growing of vegetables to flowers, eventually concentrating on carnations. In the late '60s they again diversified into other ornamental crops which continued until 1975 when the in-

creasing energy problems after a prolonged strike in 1973 brought to an end the flower-growing side of the business. This left the company concentrating full time on their mushroom operation and brings us back to a pile of compost which is ready to be transported to the firm's major site on the western side of Waterloo. This particular expansion took place in the early '60s.

If you can visualize two three-tiered bunk beds about 70 feet long by 5½ feet wide in a long, windowless room, then you have a picture of a mushroom house. Several of these long low cement-block houses are connected by a wide corridor. The first building we entered was the "sweat house" where the compost is placed in beds to go through a process of natural heating or pasteurization, which rids it of pest organisms, and then a gradual cooling. Temperature in these rooms reaches 140 degrees F. and the men checking the beds must wear protective clothing. A chart is posted on the door of each room and complete records are kept on the compost's progress. This stage takes about eight days.

When the cooled, pasteurized compost is ready for the final stage, it is conveyed into trucks and transported to the temperature-controlled growing houses. It is at this stage that the mushroom spawn which has been inoculated on rye grain, is fed from a hopper and mixed into the compost being conveyed into the truck.

There are several varieties of the cultivated mushroom, *Agaricus bisporus*, with the white variety being the most popular with consumers. As Irving Slack pointed out, "Either fortunately or unfortunately, we have educated most of the people to choose tight button mushrooms and here in Canada people eat with their eyes as much as with their palates. In Britain or Australia, for instance, they'll use mushrooms that we wouldn't even look at, and part of the reason for this is that they are used to eating the wild fungi. In Europe they see many different types that are relatively unattractive to look at but the taste is excellent." There is also a coffee-coloured mushroom which Slacks grow. It is a firmer, darker mushroom used mainly by commercial buyers, particularly for the pizza trade as the mushrooms slice well.

In the mushroom houses, the planted spawn grows, or as they say it "runs" in the compost for about two weeks and then a one-inch layer of soil is placed on top of each bed. This topping or casing soil somehow induces the matured spawn to produce mushrooms.

For an adequate supply of casing soil about four or five acres of top soil is removed from the company's own farmland each year and stored on the site. "It takes from 12 to 15 years for us to renew the top soil on the land," Stuart explained, but after it has been sterilized we add some of the spent material to the land at the end of each mushroom crop. It is worked in and over a period of years — we grow hay or grain crops — the soil becomes rejuvenated."

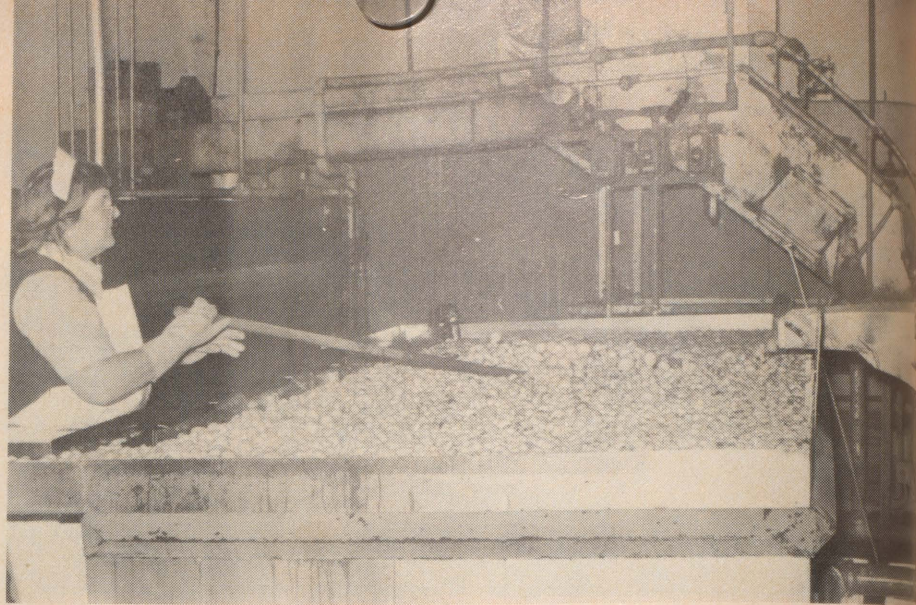
In about 28 days the first picking can begin and men wearing miners lamps pick straight into the pint-size boxes so familiar on grocery shelves. Mushrooms grow in "flushes" at 7 to 10 day intervals, so each bed can be picked for a seven to eight week period. The pickers are highly trained, knowing exactly when a mushroom is ready

Sixty per cent of Slack's mushrooms are sold to the fresh market; the remainder are canned or freeze dried.

— size is not a major determining factor. Yield is about 2½ pounds per square foot of bed space. Once a house has been picked, it is steamed and the soil returned to the farm land.

The mushrooms are then placed in a cooling room in the main building on the property which houses the offices, the cannery, packaging and storage areas. The boxes are placed on conveyor belts where sorters pick out those mushrooms not suitable for the fresh market, which consumes roughly 60 per cent of total production. The remainder are either canned whole or in pieces, or freeze dried for both the wholesale and retail markets. Their program for fresh mushrooms is so well organized that it takes only about 36 hours from mushroom bed to grocery store.

Ending our tour, we returned to the comforts of the modern conference room to discuss some of the aspects of this highly specialized business. We learned from Stuart McDonald that per capita consumption of mushrooms in Canada is now close to three pounds as compared to approximately 2½ pounds in the U.S. Consumption varies tremendously between rural and urban centres and from one part of the country to another. In 1976 Canadian consumption was 66 million pounds, with Canadian growers producing about 40 million. During the first six months of 1977, 37 million pounds had been imported. Domestic producers are not yet able to supply the demands of the Canadian market. "At one point we exported to markets in England, Europe, and the Caribbean but," Stuart emphasized, "in the past year or so we have been pulling out of the export market and concentrating more on our own domestic market which is largely in Quebec and the Maritimes. If you want to maintain continuity on the supermarket shelves, you have to supply a high quality product on a regular basis."



Naturally, the fresh market is the most profitable and Stuart told us that many growers, particularly in the U.S., have been switching from cannery production to the fresh market. They are very much aware of the tremendous potential in the fresh market.

When Professor Estey commented on the fantastic expansion of the operation (he remembers visiting Slack Brothers when production was at the two million level), Irving Slack pointed out that since 1922 a total of 200 growing houses have been built, each of which is five thousand square feet.

On the subject of efficiency, Irving Slack said that mushrooms as a crop are fairly high energy consumers so he and other growers in Holland, Italy, and Britain are attempting to develop systems that will be less consumptive of energy.

Discussing his own operation, he said "we don't wish to expand our labour force nor to reduce it much but we must think in terms of efficiency. We are not far behind other growers in this regard and, although we are operating a very old plant, what we lack in modern adaptation we supplement with our own improvisation. Most farms work on a straight shelf system or a tray system. The tray system means replacing labour with tremendous capital costs and we don't visualize that in our set-up. Trays last not more than five years; most people replace them before that. We get up to 15 years out of our shelves, which are

hemlock and can stand the constant dampness. Today most shell growers are happy with the system because they see where they can modernize and cut out some of the drudgery jobs. In the past few years we have been able to eliminate about 60 per cent of these. In the foreseeable future, we should be able to eliminate all but the last few per cent that can't be done without."

High costs and a concern for efficiency are key factors in any enterprise and obviously a prime reason as to why there are only from 12 to 15 commercial mushroom growers in Quebec and about 140 in all of Canada, which includes some 80 in British Columbia.

"Conditions are very difficult," Irving Slack explained, "I know of two or three plants in Quebec right now that are for sale. They started during the heyday of relatively low costs of raw materials and energy and there was a plentiful supply of labour. Then we all went through a period when prices skyrocketed. Hay went from \$20 to \$50 a ton and straw was almost as bad, if it was available at all. Some of these people didn't put up viable economic operations in the first place.

They were too small." This, of course, provoked the inevitable question on all our minds: what does it take — not counting know-how — to get into the business on a commercial scale. A question, Professor Estey, in particular, is asked several times a year.

(Continued on Page 13)

Mushroom Growing

Some historical and other notes

by Professor R. Estey,
Department of Plant Science

Mushrooms have been appreciated as a table delicacy since very ancient times, and the art of cultivating them was known to people of the middle eastern countries hundreds of years before the time of Christ. However, the practice of cultivating them on a commercial basis was not developed to any extent until Louis XIV (1638-1715) encouraged the art of fine cooking with mushrooms. Some of the first commercial ventures were undertaken in the abandoned quarries and caves in the limestone that underlies Paris. By 1867, a cave near Paris with more than 20 miles of beds was producing nearly 3,000 pounds of mushrooms every day of the year.

It is generally believed that the first buildings for mushroom growing were constructed in Germany in the early part of the nineteenth century, although the British and others had been growing them in cellars of buildings and in dark places under the benches in greenhouses for a long time prior to this. The most rapid advances in the evolution of mushroom houses have taken place in the past 50 years. Now the modern grower is within reach of controlled temperature, humidity and aeration all the year round.

The early mushroom growers used natural "spawn" collected from meadows and other places frequented by horses because it was early recognized that some of the best mushrooms grew in horse pastures.

Spawn is composed of the mycelium or root-like part of the mushroom. It is regenerative, much like that of a potato tuber. That is, a piece of spawn planted in a favourable environment will grow

and produce mushrooms just as a piece of potato when planted will produce new tubers.

The English meadows were rich in natural spawn so the growers there began exporting to other countries. They sold a "brick" spawn made from a mixture of horse manure, cow manure and loam which was often contaminated with other fungi, insects, and weed seeds. Eventually (1894) two mushroom growers in France succeeded in making pure spawn from mushroom spores. They patented their method, but it never became a commercial success.

In 1905 an American developed a method of making pure spawn from the tissues or flesh of mushrooms. This vegetative method of producing spawn made it easy to select and guarantee the purity of a particular strain of mushrooms. Almost from that date onward the business of producing spawn became a commercial enterprise distinctive from mushroom growing.

Early in 1918 another American revived the spore method of producing spawn. He used milk bottles as culture flasks. These bottles, with a mixture containing horse manure, were sterilized and plugged with cotton in much the same way that mycologists or microbiologists handle cotton-plugged culture tubes. Spores from selected mushrooms were inoculated into the bottles which soon became filled with a pure culture of the spawn.

The art of preparing compost, the "soil" in which commercial mushrooms grow — has evolved more slowly than that of housing or spawn production, but it too is becoming a science as much as an art. A specially prepared "compost" is essential to the production of mushrooms on a large scale. More than 200 years of experience have convinced

growers that horse manure is one of the best basic ingredients for their compost although it is well-known that mushrooms can be grown on various other composted (partially decomposed) organic materials. The objective in preparing a compost is to get a medium or "soil" that is not only acceptable to the cultivated mushroom, but one that is more suited to the mushroom than to any other fungus.

Mushroom farming made rapid strides following the general acceptance of pure culture spawn and the practice of pasteurizing the mushroom beds before planting the spawn. Yields soon shot up and are now two pounds or more per square foot.

This increased production by modern, efficient, sanitary methods has made mushrooms readily available in most of our supermarkets at affordable prices. Cultivated mushrooms have a place in the diet of the average Canadian not only on the basis of their flavour and taste appeal but also because of their food value. In common with most vegetables, mushrooms contain a high proportion of water, but on a dry weight basis they are richer in protein than most comparable garden crops. They are an excellent source of folic acid, the blood-building vitamin that was once thought to be confined to spinach, kidney, and raw liver, and they are rich in several members of the vitamin B complex, including nicotinic acid and riboflavin. Mushrooms are low in fats and carbohydrates, thus making them especially appealing to all those who prefer or need to eat low calorie foods. In other words, the mushroom is no longer considered as a mere luxury item but an economical staple food item which adds variety to the menus of more and more Canadians each year.

Mushrooms on the Menu

We would like to thank the Canadian Mushroom Growers Association and Slack Brothers Ltd., for their permission to choose a selection of their recipes for publication in the Journal.

Mushroom Chowder

3 tablespoons butter or bacon fat
3 tablespoons chopped onion
1 cup water
 $\frac{2}{3}$ cup sliced celery
2 cups diced potatoes
 $\frac{1}{2}$ pound (1 pint) mushrooms, quartered
2 to 3 teaspoons salt
 $\frac{1}{2}$ teaspoon pepper
Dash of caraway or paprika
4 cups milk
Snipped parsley

Melt butter in saucepan. Cook onions until slightly brown; add water, celery, potatoes, mushrooms, salt and pepper. Cover and cook until vegetables are tender (about 15 minutes). Add milk. Heat but do not boil. Add a dash of caraway or paprika and serve immediately with fresh parsley sprinkled over the top and accompanied with crackers or toast.
6 servings.

Polish Scrambled Eggs

1 pound (2 pints) mushrooms, sliced
 $\frac{1}{2}$ cup butter or margarine
8 eggs
2 tablespoons chopped green onions
 $\frac{1}{4}$ cup milk
1 teaspoon salt
 $\frac{1}{4}$ teaspoon pepper

Sauté mushrooms in half the butter, about 5 minutes. In a bowl lightly beat the remaining ingredients together with a fork. Stir in mushrooms. Melt remaining butter in a fry pan. Pour in egg mixture. Cook over low heat, stirring from the bottom until eggs are firm but not dry. 4 servings. Accompany with hot buttered toast, hot canned tomatoes, crisp pickles, and coffee.

Tuna-mushroom Casserole

(3 to 4 servings)

1 pint fresh mushrooms
2 tablespoons butter
2 tablespoons flour
 $\frac{1}{4}$ teaspoon salt
1 cup milk
1 can (7 oz.) tuna
 $\frac{1}{2}$ cup raw carrot, shredded
1 tablespoon celery, chopped fine
1 tablespoon onion, chopped fine
 $\frac{1}{4}$ teaspoon nutmeg
2 cups crushed potato chips

Slice large mushrooms or cut in chunks, but leave small ones whole. Sauté in butter 5 to 6 minutes. Blend flour, salt, milk and add to mushrooms. Cook until thickened, stirring constantly. Break tuna in chunks. Mix lightly with creamed mushrooms, adding carrot, celery, onion and nutmeg to the mixture. Blend in $1\frac{1}{2}$ cups of potato chips. Pour mixture into 4-cup casserole and sprinkle remaining potato chips over top. Bake 30 minutes in oven at 350 degrees F.

Meat-n-Macaroni

(4 to 6 servings)

2 cups uncooked macaroni (elbow or shell)
1 cup chopped cooked or canned meat
1 pint fresh mushrooms, sliced
2 tablespoons chopped onion
2 tablespoons chopped green pepper (optional)
2 tablespoons butter
1 can (20 oz.) tomatoes
 $\frac{1}{2}$ teaspoon salt
 $\frac{1}{4}$ teaspoon pepper
3 tablespoons grated cheddar cheese
3 tablespoons bread crumbs

Cook macaroni according to package directions. Drain. Sauté mushroom slices, onion, and green pepper in butter 4 to 5 minutes and mix with macaroni. Stir in meat, tomatoes, salt, pepper. Pour into buttered casserole and sprinkle cheese and bread crumbs over top. Bake in 350° oven until top is golden brown (about 30 minutes).

Chicken Pie

(6 to 8 servings)

1 fowl (4 to 5 pounds) boiled in 6 cups water with chopped carrot, onion, celery and desired seasoning
1 pint fresh mushrooms
3 tablespoons butter
6 to 8 onions, boiled
2 medium potatoes, boiled, diced
Salt and pepper to taste
 $1\frac{1}{2}$ cup mixed carrots and peas cooked
6 cups medium white sauce, made with chicken broth or part broth and part milk
Biscuit or pastry dough

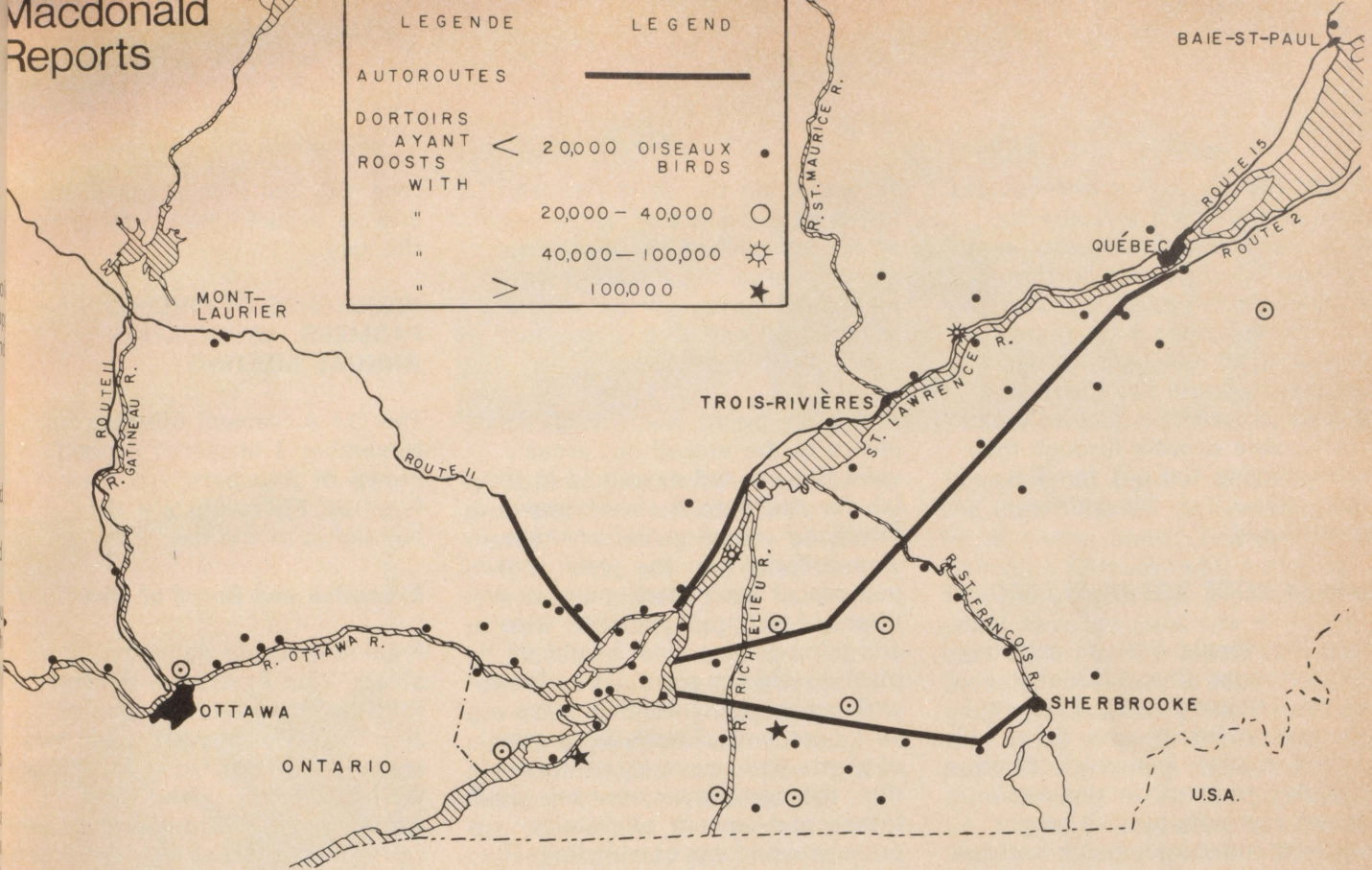
Remove meat from chicken bones and cut in medium-size chunks. Strain stock for use in sauce. Sauté mushrooms 6 to 8 minutes. Add salt and pepper. Combine meat with sauce, sautéed mushrooms and remaining ingredients (except dough) and pour into greased individual casseroles or one baking dish. Top with pastry dough or biscuits. Bake in 425 degree oven until crust is browned (25 to 30 minutes).

Fry-Pan Gravy

Good with pork chops, hamburger, minute steak, or sausages.

2 tablespoons fat
2 small onions, finely chopped
 $\frac{1}{2}$ pound (1 pint) mushrooms, chopped
1 tablespoon chopped parsley
 $\frac{1}{4}$ teaspoon salt
Dash pepper
4 teaspoons flour
1 cup beef bouillon

Retain 2 tablespoons fat in pan after frying meat. Sauté onions, mushrooms, and parsley in the hot fat. When onions and mushrooms lose their crispness, sprinkle with salt, pepper, and flour and mix well. Pour in the bouillon and heat, stirring constantly until gravy thickens. Serve with the hot meat, or return the meat to frying pan and let it simmer a few minutes in the gravy before serving.



by Joan Habel

BLACKBIRD UPDATE

The response to the redwing blackbird questionnaire of summer '77 was tremendous — more than 1,000 farmers returned valuable information from their regions to the Wildlife Resources Department. These replies have enabled students and staff at Mac to compile a lot of valuable data on the whereabouts and habits of those unwelcome flocks which cause so much damage in farmers' fields.

Of the 90 roost sites which have been reported, 75-80 have been identified and visited by College personnel (see map). The greatest number are located near the large rivers — Richelieu, Ottawa, St. Lawrence — and around big urban centres. As Drs. Bider and Titman of the Wildlife staff describe the situation, "Where there are people and/or corn, there are blackbirds!" Researchers have counted more than one million blackbirds and starlings in these roosts; the grand champion site is near Beauharnois, where 200,000 were counted in the August peak!

How did this study get started in the first place? The farmers themselves asked the College to help them with this enormous problem. Government statistics have estimated crop loss from all types of birds runs as high as \$16.5 million or 10 per cent of the total yield and it is known that redwing blackbirds cause 80 per cent of the damage. Other estimates have shown that one redwing in the spring can be responsible for \$6 worth of damage over the season. Whichever way you look at it, losses are much too great.

With financing from the Quebec and federal Governments, the Wildlifers began their study in the summer of 1976. They visited two shopping centres. (Fairview and Anjou) and two rural fairs, (Shawville and Papineauville), to find out how a cross-section of nature lovers, both French and English, felt about the various aspects of hunting in general and, more specifically, blackbird control. The findings were interesting. Although a certain segment of the urban and suburban population were real protectionists who associated the killing or capturing of redwing blackbirds

as picking on "nice animals", others recognized and understood the economic problem for farmers. Rural communities were largely in favour of control. While some eyebrows would inevitably be raised, it became evident that the general public could be educated to a program of rational blackbird control. Narrowing down to the people with the problem, the farmers' questionnaire of '77 showed the following breakdown of opinions on lethal control: 9 per cent were against lethal control, 44 per cent favoured localized lethal control, 34 per cent wanted province-wide control, and 13 per cent gave no response.

The most popular solution seems to be lethal control of redwings only in localized regions where they present a serious economic problem. Next year, roost sites will be reviewed again, to verify birds' habits and to get a better idea of the actual damage they cause. A pilot program will be started to find out where the greatest concentrations of birds are in March, with a view toward reducing the numbers in spring before the birds can mate.

The individual farmer can still

protect his own fields with devices such as exploders to scare the birds away. But the experts see that the overall policy in the province, in terms of cost factors and ecology, should be regional control. With the help of our Mac Team, some day Quebec's farmers in currently plagued areas may be able to walk through their fields singing the old familiar song, 'Bye, 'Bye, blackbird! Ou presque!

BARLEY ROOT ROT IN QUEBEC

On a Macdonald College regional test site near Thurso, Quebec (on the Ottawa River), a heavy infection in barley was first noticed in 1976. It was identified as barley root rot, in this case caused primarily by two fungi, *fusarium* and *cochliobolus sativus*. Since a fair amount of this disease has been seen in the prairies, Ontario, and P.E.I. in the past 10 years, Drs. Harold Klinck and Réal Pelletier of the Plant Science Department decided to conduct a survey of the severity of the disease in Quebec.

They contacted the regional agronomes in southwestern Quebec, who in turn obtained the cooperation of 23 farmers in the Vaudreuil, Chateauguay, and St. Hyacinthe areas where barley is an important crop. In the summer of '77, two students were assigned to the project. In a barley field on each farm, they staked out five kitty-corner locations on which to keep records. In late May and early June, they collected samplings of six-inch seedlings in the same fields, which were brought into the lab at Mac to determine how much sub-crown internode (part of the stem below ground) infection was present. An average of 23 per cent infection was discovered, ranging from four to 52 per cent over the 23 fields.

The researchers returned to the farms in mid July, when the barley was fully headed, in the late milk or early dough stage. They checked the plants in each marked area for spot-blotch, a symptom of the disease which

shows up on the upper leaves. In the field inspection, an average of six per cent of the leaf areas were covered, but coverage on individual leaves varied widely, from 0 - 80 per cent of the leaf area.

In August, before harvest, all the plants in the staked out areas were dug up and examined in the lab for the extent of sub-crown internode infection. Information was collected on the yield components of each plant: number of tillers, 1,000-grain weights, size and number of grains, height of plants, yield per plant. Using barley with no or low infection rates as a base, and classifying groups of plants as to severity of infection, the correlation between yield losses and amount of disease present could be established. IT WAS SIGNIFICANT that in infected plants, the overall average yield loss was 45 per cent, with a range from 26 - 68 per cent.

On the basis of these findings, the field trials will be repeated for another year. If researchers collect the same kind of data, other useful information given by the farmers — crop rotation system, soil types, fertilizer used, variety of barley planted, time of ploughing, seeding date and rate, land drainage or no — will be investigated to try to determine why root rot is present in certain fields.

Dr. Klinck thinks that the greatest hope for control is to breed root rot resistance into barley; there are strains available which show tolerance to root rot and could provide the plant material for new cultivars. Bruce, a new Ontario variety, claimed to be resistant to the disease, is on test in Quebec, but is not yet recommended here.

It is realistic for a good farmer to obtain 75 bushels of barley per acre. If an individual field or those in a specific area fall far short of this potential, maybe the farmer should have his plants checked for

root rot. And if it is found, he can be assured that help is on the way.

HIGHLIGHTS OF QUEBEC FARMERS' ASSOCIATION ANNUAL MEETING

The Q.F.A. Annual Meeting on November 2 attracted a good crowd of members and their families. Following are the highlights of the day:

Executive and Board of Directors

President, Doug Johnston, Stanstead; Vice President, Walter Kilgour, Shawville; Treasurer, Jim Todd, Huntingdon. Directors are: **Ayer's Cliff** Doug MacKinnon, Wallace Mosher, John Brus, Armel Grenier. **Brome-Missisquoi** Larry Frizzle, Bruce Howard, Harris Shufelt, Walter Kuhne. **Bulwer** Malcolm Fraser, Walter Hodgman, Gordon French, Peter van Lierop. **Chateauguay** Jim Todd, Bill Bryson, Gerald Duncan. **Lachute** Bill Dings, Rodger Lyster. **Pontiac** Chris Judd, Walter Kilgour, Bill Hanna. **Rawdon** Clifford Parkinson. **Richmond** Ken Hodge, Douglas Beard, Bernard McAdams. Some of these above-named Directors will serve as alternates on the Board.

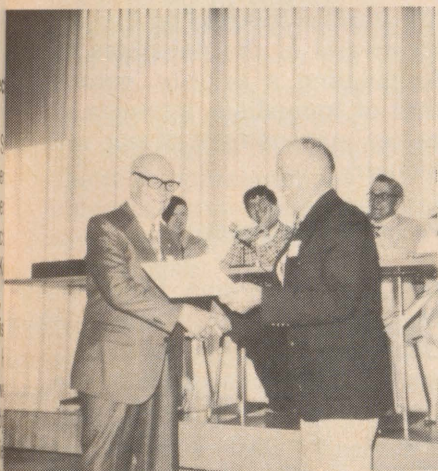
Dean's Welcome

The Dean of the Faculty of Agriculture, Lewis Lloyd, extended a cordial welcome to Q.F.A. on behalf of Macdonald College. He explained that the College was anxious to meet the farmers' needs, and that an organization such as Q.F.A. could help by trying to keep Mac informed of those needs.

Honorary Life Membership

Walter Hodgman of Cookshire was presented with an Honorary Life Membership in Q.F.A. as a tribute to his unceasing work in all levels of the organization, and earlier, in Farm Forum. The presentation was made by Walter Kilgour of Shawville.

p: Marc Côté, CBC Midday Magazine,
 chaired the question period for
 Roger Schwass, guest speaker.
 Doug Johnston, QFA President, is on the
 right. Below: Walter Hodgman, left,
 received an Honorary Life Membership
 QFA from Walter Kilgour.



Guest Speaker

Rodger Schwass, Dean of Environmental Studies at York University and a well-known economist, came from Toronto to visit old friends and to address the meeting. Raised on a farm in Ontario and still farming there, Dr. Schwass was, in the late 1950s, associated with Farm Forum, which later became Q.F.A.

in Quebec. He spoke about the pros and cons of socialistic trends, the rising power of the civil service, and the need for farmers to protect their liberties in view of increasing controls in all industries. He remarked that "We have seen the growth of government from an agency principally concerned with justice, defense, and tax collection to a mammoth which intrudes into everyone's life, in transportation, communications, environment, research and development, regional development, the transfer of incomes between regions and groups and almost every area of human activity . . . polls show that the majority of the people of Canada want still more government." He added, "Socialism on the farm will not come about because farmers want it but because the other 95 per cent of the population will become convinced that the farmers are conspiring to control production or to charge too much for their product, and the industry must

therefore be tightly regulated by the state." In his closing remarks, Dr. Schwass stated that the Canadian farmers, who make up five per cent of the population, could have an ideal life if they can "retain their freedom to make personal business choices, while gaining those collective strengths they need through institutions such as marketing boards which they control." After his address, Dr. Schwass answered questions from the floor, with Marc Côté of C.B.C. Midday Magazine acting as moderator.

Reception

The afternoon ended with a reception in the Centennial Centre Lounge, catered by the West Island Women's Institute, an excellent opportunity for members, college staff, and students to meet and visit with Dr. Schwass and Marc Côté. Richmond Q.F.A. showed a 25-minute film of their second Annual Farm Day, held last summer.

Continued from Page 8)

To produce a pound of mushrooms would say something in the order of \$1.50," replied Irving Slack, "but that depends on how it is done. For instance, if people are willing to put in their own labour and have the skills — and it's getting pretty skillful these days because of the technology of the business, you might be able to do it for less than that. "As far as minimum production is concerned, if it is a family-type operation I would think you could operate viably with upwards of about 70 thousand square feet of bed space.

"In Holland, for instance, they operate at smaller levels but they have a complete co-operative system. They have research and training facilities at their disposal and they get a great deal of government backing — it really started as a government project. Certainly, they have their problems and their yield may be low, but it is only a matter of gaining more experience. Successful mushroom growing requires a long training period because it's a very difficult crop to learn."

It is precisely because of this last statement that we have not attempted to make this a how-to type of article, nor gone into too much technical detail in describing

what seems to us a highly successful, unusual type of farming. We have not discussed the diseases and moulds that growers must contend with but we have tried to portray a realistic picture of an extremely fascinating enterprise, because that is how it was presented to us.

The sight of mushrooms growing is a delicate delight; a natural work of art; growing the mushrooms is also an art; one which when combined with scientific knowledge, keen business acumen, and years of experience adds up to Slack Brothers Limited — a name synonymous to many with the very popular crop they grow.

The Family Farm



Published in the interests of the farmers of the province by the Quebec Department of Agriculture.



TAKING STOCK OF QUEBEC'S SWINE INDUSTRY

On October 20 and 21, 1977, representatives from all sectors involved in Quebec's swine industry attended an unprecedented gathering in Drummondville to review this second most important agricultural production in the province. The theme of the conference was "Taking Stock of Our Swine Industry".

Organized by the Marketing Service and the Livestock Production Services of the Quebec Department of Agriculture, the conference attracted over 200 producers, processors, bankers, retailers, veterinarians, and marketing and production advisers working in the swine sector at both government and private levels.

Its aim was to study all aspects of the Quebec swine industry, with a view to clearly identifying problems related to production, financing, marketing, and environment which daily beset the various enterprises working in the swine sector in the province, and, if possible, come up with effective and lasting solutions.

The conference concluded with a debate which allowed for fruitful exchange among representatives of the different sectors concerned with hog production.

Pesided over by the Deputy Minister of Agriculture, Mr. Ferdinand Ouellet, the debate grouped Florent Fortier of the Royal Bank of Canada, Conrad Bernier, Yvan Jacques and Jean Desjardins of the Quebec Department of Agriculture, Jean-Claude Simoneau of the Farm Credit Bureau, Paul Gagnon, crossbreeder,

and Claude Dufour of "provi-viande".

Beware of "volumitis"

As regards production, Conrad Bernier, director of the Livestock Production Service of the Quebec Department of Agriculture made a seven-point summary of the main concerns and type of participation on the part of those involved, especially in the governmental sector. These points include:

- lack of breeding stock with an identified and validly measured genetic potential;
- lack of technical expertise on the part of those involved in swine production; also their mitigated interest in improving the productivity of swine operations, to the detriment of expansion, which Mr. Bernier referred to as "volumitis";
- lack of technical supervision provided for the producer by the Department's trained staff;
- lack of serious research adapted to the needs of swine producers, namely, in the fields of genetics, feeding, health, and environment;
- lack of concerted action on the part of the different services of the Department aimed at reaching decisions which will ensure efficiency and profitability in the face of rapid increase in the Quebec swine industry;
- importance of solving hog producer's problems related to the environment.

Mr. Bernier concluded on a serious note with the following question: "In light of Quebec's self-sufficiency in the hog sector — the Province producing at present 105 to 110 per cent of its domestic needs — how are we to counteract

the negative effects of over-production in the event of loss of certain of our export markets?" Mr. Bernier touched on the concern of several of the delegates by formulating a priority, namely, that of immediate attempts at better management of our swine industry.

Promote Our Product

Mr. Jean Desjardins, head of the Marketing Service of the Quebec Department of Agriculture, appealed for concerted action from everyone involved when he stated, "We have reached a point where, if present success is to continue, there is an absolute necessity for concerted action to ensure the development of markets, to agree on strategies, and to promote our product first at home and then outside the province."

Mr. Desjardins indicated that the need for promotion surfaced during the discussion on hog production and marketing. He mentioned his Department's participation in the form of technical and financial assistance to producer groups working on promotional campaigns aimed at the consumer.

Abattoirs, delicatessens, and meat packers may take advantage of the services provided by the Department's Technical Aid to the Food Industry Service, and "la Société québécoise d'initiatives agro-alimentaires," a government agency. The speaker also stressed the necessity and importance of a system of inspection similar to that set up by the Department to ensure quality food products at the consumer level.

Reiterating the theme of concerted action, Mr. Desjardins expressed

his satisfaction with the conference, because, among other reasons, the delegates raised four important points which the Department is reviewing at present. They include:

- the need of standardizing cuts;
- a revision of carcass grading methods;
- price fixing in relation to quality so that hog producers who try to improve the yield of their animals will be rewarded for their efforts;
- the importance of dialogue with abattoir representatives in order to solve the problem of supplying wholesalers and food chains.

Touching on the environmental question, the head of the Marketing Service stated that, in his opinion, it is the government's responsibility to take measures which private enterprises cannot implement alone.

Limit Financing

Defending the financial point of view, the vice-president of the Farm Credit Bureau, Mr. Jean-Claude Simoneau, pointed out that very large sums have been invested in the Quebec swine industry, especially over the past two years. These investments have made it possible to increase both the number of piggeries and farrowing pens and the number of piglets and feeder hogs.

According to Mr. Simoneau, we should question whether present methods of funding are truly appropriate for existing needs. As a financial expert, he also wonders what the scope of Quebec's swine industry should be and how many hogs can be produced without creating a surplus.

Think Marketing

Mr. Yvan Jacques, the Deputy Minister in charge of marketing, pointed out that hog production must more and more be based on the availability of markets.

"Agriculture in Quebec, which, until recently, was mostly directed towards production, is now based on marketing." Mr. Jacques pointed out to the delegates that the Department is willing to participate in setting up new programs to improve the marketing of pork products in the province and is open to any suggestion aimed at improving existing programs, if need be.

Consolidate Our Markets

Mr. Claude Dufour, representing "provi-viande" voiced the concern of distributors by indicating the problems related to the grading of hog carcasses and the fixing of weekly prices. He also stressed the importance of consolidating Quebec markets.

At the conclusion of the conference, a recent Agricultural Merit winner, Paul Gagnon, breeder of foundation stock and cross-breeder, showed complete satisfaction with the high calibre of the Department's services and specialists made available to hog producers. He nevertheless expressed the hope of even better coordination among these services and of a greater number of specialists in the swine sector. Mr. Gagnon would also like to see more government research grants in the crucial area of the environment. Finally, the winning producer indicated that he attached great importance to the search for markets and to promotional planning designed to stimulate the sale of Quebec farm products.

First today . . . but tomorrow?

Mr. Florent Fortier, representing the Royal Bank of Canada, asked the delegates to consider three timely questions which led to an animated discussion. These questions, which remain to be answered — perhaps at another conference — are as follows:

- How does Quebec intend to maintain its top position in the swine sector?

- What should be done with the "Act to promote credit to farm producers"?
Is it outdated? Should it be replaced or amended?
- In the event of a pork surplus, should there be a levelling off of financial assistance to the pork industry?

In conclusion, the banker noted a lack of coordination among the different government bodies, integrated breeders and hog producers, and was pleased that the conference had marked the beginning of improved cooperation.

In Search of Markets

Mr. Ferdinand Ouellet, Deputy Minister of the Quebec Department of Agriculture, concluded the debate with an address, excerpts of which follow: "Every hog producer must recognize the need for concerted action by Quebec and the fact that we live in a North American context where several persons make decisions which affect the hog industry to various degrees. The Quebec Department of Agriculture must support, in every way, the action of dynamic agri-business leaders, for example, at the export level and introduce measures which would otherwise not be feasible at the private level, e.g., research on pollution control and improvement of the environment. When production in a particular area develops at a more rapid rate than in another, it often implies that the agri-business leaders have acquired an ability, developed a technology, and shown a spirit of initiative which enables them to surpass their counterparts working in other areas. Therefore we are not thinking in terms of self-sufficiency but rather in terms of winning markets. A Quebec surplus may, moreover, indicate that we excel in swine production.

ADVICE FOR DAIRYMEN FORCED TO REDUCE PRODUCTION

Because several Quebec dairy

producers have already filled their quota or are just about to do so, immediate steps must be taken to cope with this situation. It is for this reason that the Dairy Committee of the Quebec Live-stock Productions Council (Q.L.P.C.), fully aware of the effect of these steps on the long-and short-term production efficiency of each cow, has formulated pertinent recommendations concerning dairy herd management during this period of restricted production.

Dairy producers faced with such restrictions must realize that they are managing an operation concerned with production on a long-term basis, and must therefore avoid all arbitrary and hasty decisions which could seriously jeopardize the health of their herd. The recommendations which follow take into account selection, feeding, and optimal farm use of surplus milk and are designed to help dairymen make the most of the present situation in the Quebec dairy sector.

1. Selection of cows

The efficiency of a dairy operation depends on the yield per cow; it therefore stands to reason that the level of efficiency will be increased by eliminating the lowest producers. This is why it is most important to participate in a milk recording program and to use the information it provides to determine the exact yield per cow, cull undesirable animals, and feed cows in lactation according to actual needs.

The purpose of all milk recording programs is to provide better selection by supplying an "index" and a "class" for each cow in a unit, in addition to providing data on daily and cumulative production. In their selection, dairymen must also give special attention to various other factors such as problems related to udder, limbs, health and reproduction, which reduce the efficiency of average cows and result in increased production costs.

2. Feed in relation to lactation curve, especially during the first 150 to 180 days of lactation

A good knowledge of the lactation curve helps the dairy producer to make the right decisions regarding the individual feeding of the cows in his unit. The following table taken from the annual report of the Q.D.H.A.P. (regular), clearly shows the development of a normal lactation: 50 per cent of the total production is obtained in the first four months of lactation, and 71 per cent after six months.

MONTH	1	2	3	4	5	6	7	8	9	10
% of total Production										
— Per Month	12.5	13.1	12.6	11.8	11.0	10.0	8.9	7.8	6.5	5.8
— Cumulative	12.5	25.6	38.2	50.0	61.0	71.0	79.0	87.7	94.2	100

According to a normal production curve, proper feeding is important during the first five months of lactation. This is meant to protect the cow's health while avoiding any prolonged interval between calvings resulting from breeding complications caused by un-balanced feeding. However, from the sixth month onward, feed rations may be reduced; this results in substantially lower yields but does not affect the animal's health. In certain cases, however, reduced feeding may cause the cow to dry up sooner.

Considering the long dry period which will result from such reduced feeding, special care must be taken to balance the basic ration in order to prevent deficiencies. If certain complications in future parturitions are to be avoided, it is necessary to keep a close watch on the weight gain which often occurs during the dry period. One suggestion is that given the high energy value of corn silage, only limited quantities of it should be fed to dry cows.

3. Feeding in relation to reproduction

Since a cow is bred in the first months of lactation, she must be

given a balanced diet during this period, in order to obtain a high level of fertility and regular calvings in the future.

However, if a dairyman is forced to reduce the amount of concentrates fed to his cows, he should begin with those nearing the end of lactation. At such time, it is assumed that good forages will adequately supply most of the nutrients necessary at this stage of lactation. Cows consuming little or no meal must be given a mineral-vitamin supplement.

Optimal farm use of surplus milk

Another solution for dairy producers faced with a milk surplus is to raise vealers. A marketability and profitability study in this sector becomes necessary, since dairy producers must seek a higher value for out-of-quota milk.

To establish this higher value, the comparative cost of the milk must be determined by considering the present price of the calf. A calf sold at 200 pounds has probably consumed from about 1,000 to 1,200 pounds of milk. Provided the price of the calf remains between \$0.50 and \$0.65 per pound (live weight) it can be assumed that milk used for this purpose will bring in from \$5.00 to \$7.50 a hundredweight.

Giving whole milk to breeding heifers is another use for surplus milk. In certain cases, postponing weaning to 10 or 12 weeks of age by restricting the quantity of milk to a maximum of 10 pounds per day in favour of forage intake, also helps to eliminate some of the surplus.

Dairy producers confronted with out-of-quota milk yields must choose, from the above-mentioned suggestions, those which are best for them and which are not likely to jeopardize their herd in the years to come.

The Associated Countrywomen of the World 15th Triennium World Conference, Nairobi, Kenya, October 10 - 20, 1977

On October 7, armed with a new camera, films given me by the WI, the Bible Study group, and friends and matching luggage to which were attached all sorts of exotic labels, I left by KLM on the first leg of my journey to the ACWW Conference in Nairobi. We reached Amsterdam at 6 a.m., and I had a wait of several hours until our travel agents and other members of the WI arrived in from Toronto. Rooms had been reserved for us at the Hilton Hotel near the airport, and we were able to have a nap and freshen up before leaving on the second part of our journey. Some of the more hardy ones went into the city for a bit of sight-seeing. We had two stops on this second leg, Frankfurt and Cairo, but we were not allowed to get off the plane. We came into Cairo after dark so we did not see the Nile nor any pyramids, which was a pity.

Daybreak saw us over the mountains of Ethiopia and a rugged, inhospitable place it looked from our height of 30,000 feet. We were due to land at Nairobi at 6 a.m., but because of a lot of cloud we had to circle a few times waiting for it to disperse. This gave us a wonderful view of the mountains of Kenya including Mount Kenya and Mount Kilimanjaro on the Tanzania border and the Rift Valley. There were many craters of long extinct volcanoes in the Rift, and I couldn't help but think of the wonderful and fantastic sight it all must have been many thousands of years ago when the Rift was formed and all the volcanoes were active. Kenya is over 17,000 feet high and Kilimanjaro over 19,000 feet, and they are both old volcanoes.

Finally we landed and helped by the East African Women's League and the Mandaeleo ya Wanawaki members — who were the joint hostesses for the Conference — and our local agents, we were speeded through Immigration and Customs and were soon at our hotels.

Most of the Canadians stayed at the New Stanley hotel in the centre of Nairobi and about 10 minutes' walk from the Kenyatta Conference Centre where the Conference was held. The Centre is a beautiful building — a blend of modern architecture with an African flavour. There are fountains and many beds of colourful flowers around the Centre. Leading up to the main steps were flag poles bearing the flags of Kenya, ACWW, and all the countries belonging to ACWW. In the square in front was a tall square column with the seated statue of Kenya's President, Jomo Kenyatta.

All day Monday and Tuesday morning were for registration of the 1,500 delegates. Each of us received a folder with our voting cards, working papers and other information, and the number of our "mail" box. Invitations to receptions and home hospitality were put in our boxes and we checked them every day.

Wednesday was the official opening of the Conference and anyone who had a National costume was asked to wear it. It was a very colourful scene with lovely Norwegian and Finnish costumes, Indian saris, Hawaiian dress, and many costumes from different parts of Africa and the Far East. Two ladies from the Canadian Northwest Territories were there, too, in their Indian dresses, adding to the colourful scene. Those of us in ordinary dress felt very drab.

The delegates were entertained before the Conference opened by two groups of African women who danced and sang songs of welcome in front of the main building. Some of the women were elderly, and later I asked one if she was not tired and she, "Oh! No! I have lots of Harambe!" (Get-up-and-go-and-pull-together).

In the Conference hall the ceremonies began with three choirs, in turn, singing traditional songs. The flags of all the ACWW countries were borne in by Girl Guides and placed in holders on either side of the speakers' platform, and they remained there till they were taken out again on the last day. Mr. Daniel arap Moi, the Vice-President of Kenya, brought greetings from president Kenyatta, who said he hoped that the women would continue to intensify their efforts to promote understanding among all peoples of the world. Mrs. Olive Farquharson, President of ACWW, Mrs. Jane Kiano, chairman of the Mandaeleo ya Wanawaki, and Mrs. Jean Anderson, chairman of the East African Women's League, all spoke briefly stressing the aims and achievements of our groups and expressing hopes for a good Conference for all the delegates.

At this Conference some changes in the bylaws were being proposed. The ACWW is getting to be a very large organization, eight million members from 68 countries. Some felt that less members should attend conferences to make it less unwieldy; others felt that this would give too much power to too few at the top and so interest in ACWW would lessen. We had to vote on these and other changes. Though I found it rather confusing at times, it was a good way of getting to know how the organization worked.

I was the only delegate from Quebec and had to attend all the committee meetings. The educational seminars were held at the same time and so I missed out on all but one. We did get a report on these seminars later, but it was not quite the same as hearing all the points of view at an actual meeting.

We were happy to hear that the Nutrition/Education Fund and the UN Gift Coupon 596, which we had all supported in the last Triennium, had been well used. Programs had been held in many areas in India. Exhibitions of posters in villages were shown, nutrition courses given to women's clubs and to school girls taking mother-craft courses. Madurai's joint medical and education scheme to combat blinding malnutrition among young children under six years of age was carried out in 38 villages. Dr. Zurbrigg, a Canadian who had worked on this scheme with funds from the Ontario WIs (matched threefold by the Canadian International Development Agency in Ottawa), has now left India to further her studies and the Indian Government is considering taking over the scheme. In other parts of India a survey of 423 children was made, and those who were underweight were given a special mid-day meal daily for two months after which they were re-examined. Local leaders are being trained and they go back to their villages and train others. In Indonesia a pilot program to combat Vitamin A deficiency, protein/calorie deficiency, and anaemia in pregnant women caused by lack of iron has now become a country-wide program. UNICEF is helping ACWW and local organizations in this joint medical and educational project with training equipment.

On their own, ACWW, out of the Education/Nutrition Fund, had given financial assistance to nine countries. To enlarge a kitchen and help establish a day-care centre for pre-school children in Bangalore, India; courses for village leaders in growing and marketing vegetables, again in India; In Brazil, a program in con-

junction with the Government for a medical/educational program among children suffering from malnutrition and where expectant mothers and even, where necessary, whole families receive supplementary food. The Brazilian Ministry of Health intends to now take over this project; Lesotho, Rhodesia, and Seychelles have had leadership training courses and nutrition/education programs. In Kenya, just before the ACWW Conference, a leadership course was held in Nairobi for African women stressing leadership training, nutrition education, and handicrafts. The women attending had brought samples of their crafts with them which was of great interest to the others. The teachers at this course said the enthusiasm and interest of the women was remarkable and a joy for them.

In the South Pacific, in co-operation with Health and Agricultural Ministries, leadership training and nutrition programs had also been carried out. The Education/Nutrition Fund is to be continued for the next three years. With 1980 being designated "Year of the Child" and as our programs benefit children in the long run, it is hoped that all members will continue to support it.

We heard interesting reports from the Area Vice-Presidents about the work done by women and for women in their areas. To mention a few: The East African Women's League in Kenya raise funds for piped water in a very arid and poor area of the country; fees for children attending a school for the deaf; homes for elderly women; piped oxygen and intensive care equipment for hospitals. Other groups in Africa sponsor programs for learning crafts, nutrition, child-care training for girls, raising funds for maternity equipment, and many, many charities.

In Bangladesh, in spite of many obstacles and difficulties and lack of funds, leadership training is being given to young women who travel from different areas to a central point. The training also includes nutrition education, family planning, health in general,

adult education, and social work. The women go back to their own villages and set up women's groups and pass on their knowledge.

In Canada, nutrition education is one project WIs have been working on — removing "junk" foods from school, and encouraging nutritious lunches and meals instead. We have clean-up programs, support libraries, and exchange programs between provinces. We study land use, law reform, and rights of women. We all support Pennies for Friendship and other ACWW funds.

From Europe we heard that members were most concerned with helping women and children in the emerging nations, and money is being raised in individual groups and through pressure on their respective governments to support agricultural, health, and nutrition programs in needy countries. In England, the East Sussex and Berkshire Federations of Women's Institutes sent over 2,000 baby jackets for Zambian babies and several Norwegian groups also gave gifts of clothes to Zambian infants.

New Zealand, with the help of their government, hosted a conference for 200 Life and Contributing members with 10 women from the Pacific Islands invited and assisted to attend. This gave an added impetus to the conference theme "Sharing my World". The personal contacts made heightened interest for the Islands, and assistance has been given where possible.

One seminar I did attend was called "Dialogue." This was an exchange between countries where the needs of developing countries were brought forward and where those who could give aid, plans, or information answered.

Some needs might not seem large to us, but to the countries concerned they were almost insurmountable. Rhodesian women's groups have been taught reading and needed funds for follow-up material; Indian women's groups want to sponsor training in

andicrafts and small home industries in the villages so that the mothers can learn without having to leave their children; Zululand, in South Africa, has formed 100 women's clubs in the last couple of years. They have teachers available to teach nutrition and health programs but need such things as visual aids, pots, pans, and portable stoves to enable them to teach these programs. Several countries need transportation to get into remote areas, e., Cameroon, Ghana, Lesotho, and Niue in the Pacific.

The ACWW and the UN representatives had prepared forms and written instructions for those who want to apply for funds. They were informed as to where funds were available and how to apply. At the meeting several countries offered aid. Ontario VIs have promised funds. It was stressed that co-operation with local governments was a must and many governments already help with funds, with programs, as well as help members get to conferences. Some societies felt they could not help with large programs but were willing to contribute, and it was suggested that this could be done by a donation to the Pennies for Friendship Fund.

The FWIC, at a previous Conference, had given Lesotho, in Southern Africa, a Landrover and this had done much service taking teachers and demonstrators into many parts of this mountainous country on almost non-existent roads. Now the Landrover needs many repairs and there is little money for this. The Federated Women's Institutes of Canada has offered a new Landrover to the Lesotho Home Makers' Clubs. The old one will be sold and the money put aside for repairs to the new one when that becomes necessary. WI members are being asked to contribute on a voluntary basis to this new Landrover. As your representative I was sure the members would be glad to help in this project.

Mrs. Anne Robertson,
Quebec Women's Institutes

(Part II, next month)

Dear WI Members:

In mid-November the meetings of the Executive and Board of the Women's Institutes took place at the Sheraton-Mount Royal Hotel, Montreal. The Provincial Conveners and the County Presidents assembled in the Quebec Room and with Mrs. Lucy French, Citizenship Convener as Chairwoman, and Mrs. G. Knights, Home Economics, as secretary, work was soon under way. Before lunch the members of the Executive joined us: Mrs. Ina Kilgour, President, Mrs. Gwen Parker, 1st. Vice, and Mrs. Daisy Henderson, 2nd. Vice. We were disappointed to hear that neither Miss Smith nor Mrs. Cascadden was able to attend.

When the minutes of the morning session were read, our President said, "You ladies have been thinking along the same lines as we have." So a number of decisions were reached fairly quickly. Maybe we are not so different from that group of ladies who gathered in Stoney Creek, Wentworth County, Ontario in February 1897. Times are different but our motto For Home and Country is the same. Possibly our aims are even more challenging now, but they are still as important as they were 80 years ago.

Your County representative will have relayed to you the important decisions and recommendations. A few items made an impression on me: A letter was read from Queen Elizabeth acknowledging the message of good wishes sent by the Quebec Women's Institute. Thank-you notes were read from those who had received mohair throws.

A very successful Members Conference was held in Argenteuil County with members from Montcalm County invited. Our 1st Vice President gave the FWIC report. She asked us to make plans to do something that involves the whole family. Mrs. Parker really stressed this and it is right,

Now we will tell some of the highlights of our counties. At **Ascot** a contest was held when

17 jars of jelly were judged; 1st. Mrs. E. Marlin, 2nd. Mrs. R. Bentzen. These jellies were donated to the Bennett Nursing Home. Mrs. Gordon Sims attended the Award's Night at Alexander Galt Regional School and presented the Ascot Institute Bursary to Greg George. It was suggested that Agriculture and Education Conveners visit schools and talk to the pupils, hoping to arouse more interest in school fairs.

Belvidere had Grandmother's Day with a special cake and a gift for each grandmother. **Lennoxville**, entertained Hatley branch and had an excellent craft and hobby show and, in keeping with this program, a hand-made pin cushion was placed at each plate at tea time. At **Milby** a successful rummage sale was held and credit is due Mrs. Powell and her committee for this undertaking.

At **Beebe** each member invited a senior citizen as her guest, with the result that several men and women attended. This branch is compiling a scrap book entitled "The Growth of the Border Town".

Stanstead North's Agriculture Convener has each month given the name and legend of the flower of the month, and a sketch of that flower to a person having a birthday that particular month. There has been an exchange of visits among the branches in **Stanstead County**, and they have entertained branches from other counties. Congratulations to Mrs. William Robinson who has given 42 years' service in the WI. We may read more about this later, as I forwarded a photo and write-up to the Federated News.

Bury, in Compton County, entertained the teachers of Pope Memorial School. Also this branch held an auction of jams, jellies, and pickles, proceeds to go to the ACWW "Save Sight Fund". At the **Canterbury** branch meeting, instead of an exchange of gifts this year, it was decided to give a gift to a senior citizen, whose name will be drawn at the December meeting. A pleasant afternoon was spent in **East Angus** when the ladies entertained Brookbury, Bury and Canterbury branches, the afternoon ended with

a salad tea; and **East Clifton** hosted the County semi-annual meeting.

Members of **Dunham** branch extended congratulations to Barbara Harvey for winning two prizes at Expo Quebec. The Health and Welfare Convener from **Cowansville** read articles "Your Amazing Muscles" and "Yogurt", which indicated that yogurt-fed animals grow bigger and stronger possibly because of a mystery factor in the food. The Agriculture Convener for **Granby-Hill** reported that geese heading south now go only as far as Maryland instead of the Carolinas. An article taken from the Free Press was read regarding old eye glasses which are being repaired and lenses tested by optometrists. These glasses are shipped to Haiti and the Dominican Republic. The person to contact is Geraldine Schell, Charing Cross, Ontario N0P 1G0.

Betty Nish, Welfare and Health Convener for **Howick** encouraged the ladies to downplay the bad things in life. Experiments have proven that good news makes us feel happier and healthier. Marna Brown gave an excellent book review on "Tisha" the story of a young American nurse and her life in the Alaskan wilderness. At the **Dewittville** branch meeting, Wayne McKell spoke on the history of the area. The Beauharnois seigniory was founded by the Ellice family who came from Aberdeenshire. Their influence was quite significant, as they controlled the tenants, had interests with the Hudson Bay Company, built grist mills, and advised the building of the Beauharnois Canal.

This from **Shipton**, Richmond County, I found interesting. The branch donated towards the general expenses for a local girl who is being cared for in a foster home. The County has donated money towards this project. A Roman Catholic sister, a marvelous person, who is guidance counsellor in the local Regional High School has five or six girls in her residence — two are Indian,

the others from broken homes. The various branches are raising money to "pay back" the county donations. The local U.C.W.'s and A.C.W.'s are also interested in this work. The **Richmond Young Women** held a social evening and had as guest speaker Mr. Garth Carson whose topic was "Making Our Wills" and the **Gore** ladies heard Miss Norah Moorhead talk on the work of UNICEF.

At **Matapedia**, plans were made by the members to have a combined Christmas party and social evening with the Golden Age Members in early December. The ladies of **Black Cape** sent the evening's collection to UNICEF and ordered 20 subscriptions to Federated News. Nine members from **Marcil** planned to attend the semi-annual convention in Broadlands. **Clarendon** members decided that instead of a December meeting each lady would visit a shut-in and take a little Christmas gift. From Gatineau County, members from **Wright** along with **Aylmer** served tea and cookies at Ottawa Winter Fair. Some of the members from **Wright** reported that they had been very pleased to see Queen Elizabeth and Prince Philip when they came by train to the village of Wakefield in the Gatineau Hills. I must mention other speakers that our ladies have been privileged to hear. At **Wright**, the Reverend William Liberty, Anglican Minister, spoke on citizenship and what is expected of us in the present times. At **Black Cape**, the Reverend Oliver Carmichael, United Church Minister, New Richmond, spoke on being thankful. The guest speaker for the meeting at Arundel was a person from the WI in England, who gave a good outlook on the work they do. The guest speaker at **Upper-Lachute East End** was Mrs. Rita Choquette from C.A.P.A.R. Inc. of Lachute who gave an interesting talk on adults who are retarded. She stressed how we should help them become part of our society. Miss Betty Stanton gave an interesting talk on her teaching experiences of 34 years at **Lachute**. At **Sawyerville** Mrs. Lowry told

about her trip to Australia and at **Dalesville-Louisa** Mrs. Gorman, visiting nurse who belongs to the Cancer Society of Quebec, explained how dressings are made and packaged.

At **Ormstown**, 24 members and several visitors welcomed the Principal and staff of the Ormstown Elementary School to a luncheon after working hours on November 1st. Principal Roland Greenbank, on behalf of his group, thanked the ladies for the pleasant gathering.

Here is an interesting item from **Fort Coulonge WI**. An article was read about the value of a warm decor in a house or office to help conserve energy. The psychological effect of adding embellishments was equivalent to raising the temperature some 2.5°F.

Some roll calls reported: **Black Cape** — Ask a question in French and later on these questions were discussed. **Canterbury**: A safety rule you use in your home. **Wright**: Name a province and its provincial flower. **Fort Coulonge**: A thought from a book or an article I have recently read in regards to education. **Richmond Young Women**: What do you like doing best on a rainy day? **Dewittville**: Bring something old with a story to tell. **Brompton Road**: Guess the shoe size of the neighbour on your right, double the amount for Pennies for Friendship.

This motto is from **Dunham**: Remember when the family psychiatrist had his office in the woodshed? **Milby**: He who receives a good turn should never forget it; he who does one should never remember it. The following couplet credited to Helen Hunt Jackson and submitted by our Convener from **Argenteuil** could be very meaningful for the New Year.

One day at a time; It's a wholesome rhyme
A good one to live by; a day at a time.

Gladys C. Nugent
Publicity Convener.

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